37. Titlow Beach

Marine Preserve

Date of Establishment: March 25, 1994

Establishing Agency/Organization(s): Metropolitan Park District of Tacoma

Managing Agency/Organization(s): Metropolitan Park District of Tacoma

County: Pierce

Location/Vicinity: In Tacoma, in southern Puget Sound, bordering a shallow section of the Tacoma Narrows (see **Map 39a**).

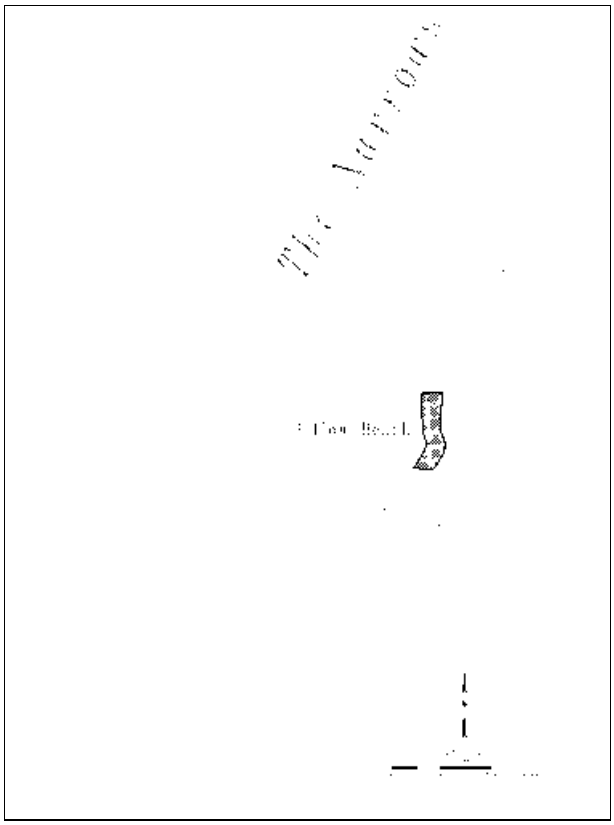
Marine Boundary Description/Discussion: The boundaries of the 'Titlow Beach Marine Preserve Area' are defined as all waters and tidal and submerged lands within a line beginning at the mean high water line at the southernmost point of the Tacoma Outboard Association leasehold, then projected due west to the intersection with the outer harbor line, then following the outer harbor line to a line projected due west from the old ferry dock at the foot of the Sixth Avenue extension, then east on said line to the mean high water line, then following the mean high water line to the point of origin" (WAC 220-16-460). The marine preserve is said to be approximately one mile long, and extends about 1000 feet offshore (WSA 1994).

Adjacent or Overlapping Marine Protected Areas: None

Current Size and Components

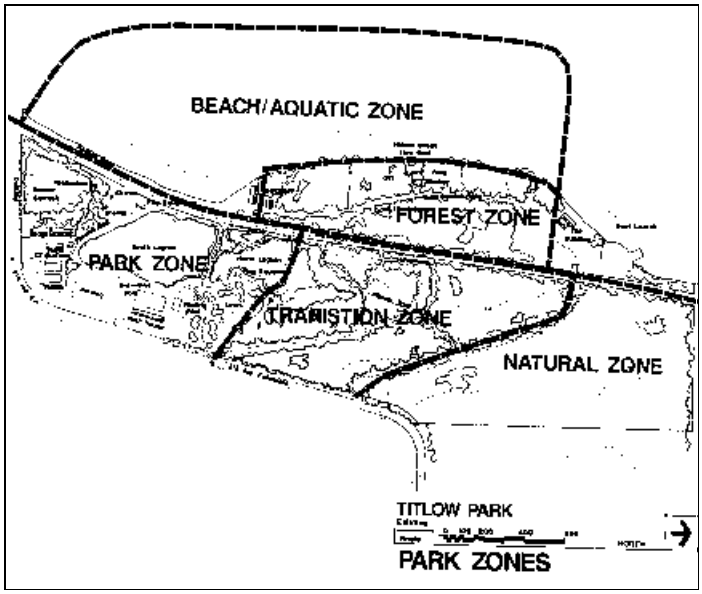
SUBTIDAL		INTERTIDAL		UPLAND		TOTAL	Shoreline
included (yes / no)	acres (if known)	included (yes / no)	acres (if known)	included (yes / no)	acres (if known)	ACRES	Length (if known)
yes	unknown	yes	13.4	no	n/a	55.6	aprx. 1 mi.

Map 39a. Location of Titlow Beach Marine Preserve



Map Source: Washington Department of Fish and Wildlife (Draft), 1997

Map 39b. Site Map of Titlow Beach Park and Marine Preserve



Map Source: Metropolitan Park District of Tacoma, Titlow Park Master Plan, 1993.

Goals/Purpose/Objectives: A Master Plan for the site lists the following guidelines for the Titlow Marine Preserve and Marine Education Program (METRO 1993):

- The marine preserve should be established for the preservation of the tidelands, beach, and the bank
- The harvesting of all life forms and materials should be prohibited
- Enhancement projects should assure there are no adverse effects to the natural environment, such as alteration of the wave action upon the beach and its bank
- An education program should explain the importance of a marine environment
- The education program should be coordinated with recommendations for the Interpretive Center, Titlow Marine Preserve, and Education Link

Park Board management goals for Titlow Beach include (May n.d.):

1. maintaining and protecting the physical attributes of the park, and
2. enhancing visitors' enjoyment of the park.

Other activities considered appropriate and encouraged at the Titlow Beach Marine Preserve management are research and non-consumptive recreational scuba diving.

Primary Legal Authority

WAC 220-16-460 — Titlow Beach Marine Preserve Area establishment.

WAC 220-56-307 (3) — Unlawful to fish for or possess shellfish taken for personal use from the Titlow Beach Marine Preserve Area.

WAC 220-56-128 (15) — Titlow Beach Marine Preserve Area closed to the taking of food fish except salmon under certain limitations.

WAC 220-52-07100A(2)(b) — Commercial closure of sea cucumber harvest at Titlow Beach Marine Preserve.

City of Tacoma Ordinance No. 24663, 8.27.100 — Prohibits damage or removal of plants (including seaweed).

Natural and/or Cultural Resource Values/Highlights

The site is "bordered by numerous man-made objects" (METRO, n.d.), and includes the remains of a pier offshore (Lundquist and Parker 1997b). Away from the pier, the bottom is 95% shallow open sandy flat with minimum eel grass. At 30 feet (normal tide) and to the south of the pier, a small ledge runs parallel to the shoreline (Higgins, personal communication 1997). Though surrounded by development, the area is rich in marine life. Marine plants at the Preserve include red, brown, and green algae, and eelgrass (*Zostera marina*). Some of the fish found at the site are: penpoint gunnel, tidepool sculpin, crested blenny, saddled blenny, starry flounder, shiner seaperch, and Northern clingfish. Marine invertebrates at the Preserve include sponges, hydras, jellyfish, plumose anemones, flatworms, polychaetes, chitons, limpets, nudibranches, snails, clams,

oysters, mussels, octopus, amphipods, barnacles, hermit and shore crabs, isopods, shrimp, sea cucumbers, sea stars, and ascidians (May n.d.; Higgins, personal communication 1997). In addition, some divers have observed wolf eels near the remains of the pier (Lundquist and Parker 1997b).

Park amenities adjacent to the marine preserve include trails, a ramp to the beach, a picnic area, and a bathhouse (Titlow Habitat Enhancement Project 1996).

Restrictions on Human Activities to Protect Marine Resources

WDFW prohibits fishing for and taking of shellfish for personal use (WAC 220-56-307[3]), as well as the taking of food fish, except for salmon fishing with artificial lures from shore or a non-motorized vessel (WAC 220-56-128 [15]). Additionally, commercial harvest sea cucumbers is also prohibited by WDFW (WAC 220-52-07100A(2)[b]).

Under City Ordinance, the damage or removal of plants (including seaweed) is prohibited without specific permission (City of Tacoma Ordinance No. 24663 8.27.100).

Beach Rangers and interpretive materials caution visitors to walk carefully so as to not harm living creatures in the intertidal zone, to replace turned-over rocks, and to handle marine life with care (prying animals from surfaces is discouraged) (METRO, n.d.).

While these state and city laws and ordinances are not applicable to Treaty Tribes members, they have to date been respected by the tribes. However, in August of 1997, the Puyallup Tribe expressed an interest in harvesting butter clams from the site (Associated Press 1997).

MANAGEMENT OF THE SITE

Planning

The Titlow Beach area has undergone a number of changes from the early part of the century until the present, several of which involved the marine area. In 1911, Aaron Titlow, a lawyer and developer who owned the property, built a resort hotel at the site, which had a dock for sightseeing boats (now gone) and a saltwater swimming lagoon. The lagoon has over time been cut off from the Sound then reconnected, sluiced out for a saltwater pool, and used for salmon rearing (May n.d.). At one time, a ferry docked at the site, but the landing was mostly demolished in the mid-1950s; some pilings are still present. The Metropolitan Park District of Tacoma acquired the property in 1926, making improvements to the uplands over the years to enhance recreational use.

In the 1980s, the Metropolitan Park District of Tacoma, local divers, and a teacher from Bellarmine Preparatory high school (a nearby private school) discussed installing underwater reefs at the site with government funding. However, the funding subsequently became unavailable (Titlow Habitat Enhancement Project 1996). In the early 1990s, Bellarmine teachers, a scuba diving group, and other community members made a push to establish Titlow Beach as a preserve area. Kelp and other marine life had become less abundant over years of consumptive use. The students were interested in studying a local marine protected area, while scuba divers recognized

the area as a high quality diving site (Weathers, personal communication 1997a; Larson 1993). A Titlow Park Advisory Committee was formed, with representation from Bellarmine Preparatory high school, Washington Scuba Alliance, the Nature Center at Snake Lake, the Washington Department of Fisheries, and city planning and parks staff (Larson 1993). The Committee advised that the entire beach be declared a marine preserve, in order to protect sea life from being collected (METRO 1993). The Metropolitan Park District requested that WDFW close the area to harvest, which it did in 1994 following a public scoping and review process. WDFW then declared the area a marine preserve and enacted harvest closure regulations (previously noted).

Currently, the Metropolitan Park District of Tacoma has a Recreational and Open Space Plan, and a master plan for Titlow Beach (Weathers, personal communication 1997a). Work has been accomplished for each of the site's planning phases, including the establishment of the Preserve, the institution of a Beach Ranger program, installation of signs, and work on the lagoons. Plans for additional work include installation of signs for boaters, additional lagoon work, and a new interpretive center (Weathers, personal communication 1997a; Weathers, personal communication 1997b; METRO 1993). In addition, the Volunteer Coordinator from Edmonds Underwater Park completed a plan to establish Titlow Beach Marine Preserve as an area that would be safe and enjoyable for recreational divers. The site is popular with dive instructors and recreational divers alike (Higgins, personal communication 1997).

Students and staff from Bellarmine are instrumental in advising the City and in carrying out some of the tasks described in the master plan. The City provides educational outreach and the students are involved in much of the hands-on marine work (Weathers, personal communication 1997b).

Supervision/Enforcement

Regulations are enforced by city police officers, who take an educational approach in dealing with visitors. Citations are issued when necessary. Brochures in English, Cambodian, and Korean further inform visitors about the site and the regulations governing it (Weathers, personal communication 1997a). There are also interpretive signs at the beach area that list site regulations. Volunteer Beach Rangers are also present seasonally to educate and supervise visitors.

Figure 16. Interpretive Sign with Rules Posted at Titlow Beach Marine Preserve

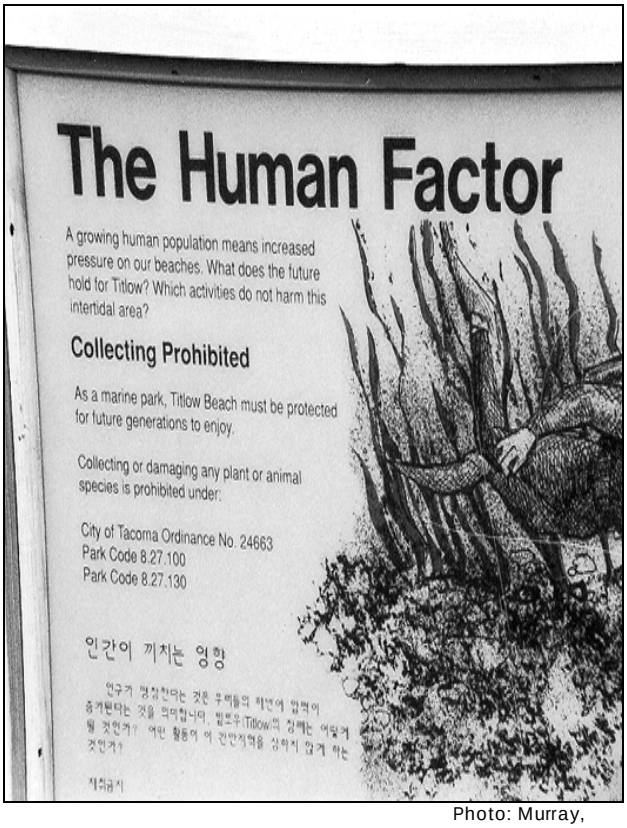


Photo: Murray, 1997

Figure 17. Multi-lingual Sign Listing Rules for Titlow Beach Marine Preserve

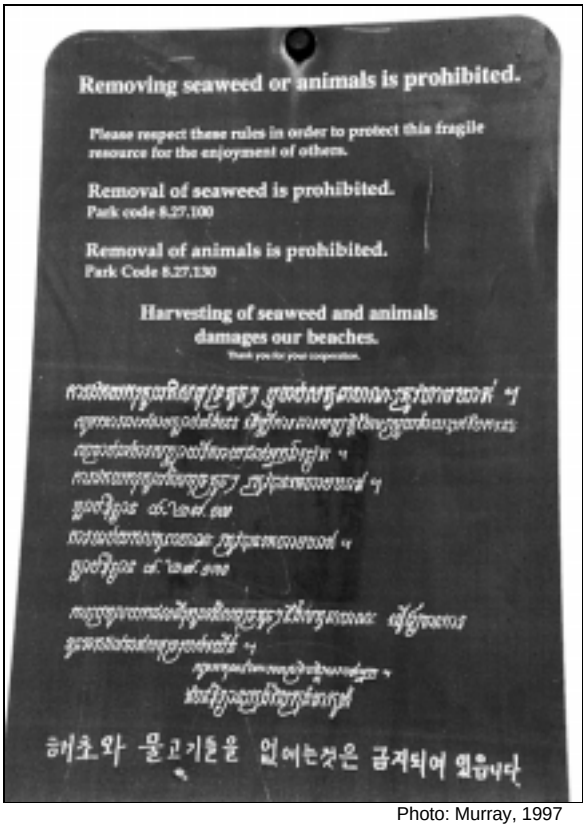


Photo: Murray, 1997

Enforcement issues related to Preserve rules involve collection of resources such as kelp and crabs. This problem, however, has been noted as decreasing (Weathers, personal communication 1997a). Boat based violations, which are currently difficult to enforce with only periodic boat patrols, may be further addressed in the future by placing buoys and signs on the water to mark the site (Weathers, personal communication 1997a).

Additional Programs: Research, Monitoring, Education, Outreach, Public Involvement

The Metropolitan Park District of Tacoma enlists volunteer Beach Rangers to provide on site interpretation for park visitors. The volunteers are present during low tides and during the warmer spring and summer months about once a week, depending upon volunteer availability. They are occasionally joined by educational specialists from the Metropolitan Parks District's nearby Nature Center at Snake Lake (Holland, personal communication 1997). Also available is an educational video about the site's marine resources and the purpose of the Preserve (METRO, n.d.).

The Beach Ranger program enables interpreters to interact with the public both informally and through formal presentations. The Rangers utilize a Titlow Beach interpretative manual, which describes the site, its inhabitants, and educational approaches for helping people learn about the

marine resources. Their goals are to promote appreciation of the natural resources and to deter activities that might harm the resources (May n.d.).

Both the upland park area and the Marine Preserve are popular with the public. Scuba divers frequent the site regularly. Local dive shops often train divers at the Preserve, which is a popular spot with recreational divers in general (Titlow Habitat Enhancement Project 1996). In 1994, an event was held with the involvement of Washington Scuba Alliance and others at the Park to map the conditions present at that time (Higgins, personal communication 1997).

Besides public recreational use of the preserve, approximately 80 Bellarmine Preparatory high school students are enrolled in the Marine Chemistry Program. Approximately five of the seniors work on a scientific research project with the City, local divers, and WDFW on a project entitled the Titlow Habitat Enhancement Project. This project includes several components, including: the installation of artificial deep water reefs, alternating strip reefs and oysters shells for nesting habitat, and tide pools of varying depths (Weathers, personal communication 1997a, 1997b; Titlow Habitat Enhancement Project 1996; Rogers, personal communication 1997b).

The students are involved in a variety of research projects: learning how to rear salmon at the campus, then releasing them at Titlow Beach; installing artificial kelp sites and measuring the fish populations they support; gathering baseline species and mapping data; and analyzing which nesting material best supports juvenile species (Titlow Habitat Enhancement Project 1996). Another project involves designing and testing artificial tide pools for optimal habitat value and physical durability of construction materials (Titlow Habitat Enhancement Project 1996; Rogers, personal communication 1997a).

Bellarmine students have raised funds to support their projects and have plans to hold additional fundraising events, such as an underwater scavenger hunt (Rogers, personal communication 1997a). Sponsorship has been provided by the Metropolitan Park District of Tacoma; Steamer's Seafood Cafe (which at one time had a display of student underwater photographs of the site [Rogers, personal communication 1997a]); Seatac Camera's West, Underwater Sports Inc., and Washington Scuba Alliance (Titlow Habitat Enhancement Project 1996).

For More Information:

Metropolitan Park District of Tacoma
Nature Center at Snake Lake
1919 South Tyler
Tacoma, WA 98405
Telephone: (253) 591-6439

Web sites: http://www.blarg.net/~nwp/titlow/
http://www.tacomaparks.com/

38. Cypress Island

Natural Resources Conservation Area

Date(s) of Establishment: 1987

Establishing Agency/Organization(s): Washington Department of Natural Resources (DNR)

Managing Agency/Organization(s): Washington Department of Natural Resources (DNR)

County: Skagit

Location/Vicinity: State-owned uplands and public tidelands of Cypress Island, in the San Juan Archipelago. Also includes tidelands adjacent to the smaller offshore islands of Strawberry and Cone (**Map 40**).

Marine Boundary Description/Discussion: Bounded at the line of extreme low tide (-4.0 feet) as follows: to the west by Rosario Strait, on the south and east by Bellingham Channel separating it from Guemes and Fidalgo Island, and on the northeast by an unnamed channel separating it from Sinclair Island (DNR 1996a). Approximately 50% of the Island's tidelands are privately owned, and as such are not part of the NRCA (DNR 1996a).

Adjacent or Overlapping Marine Protected Areas: San Juan & Cypress Island Marine Biological Preserve.

Current Size and Components

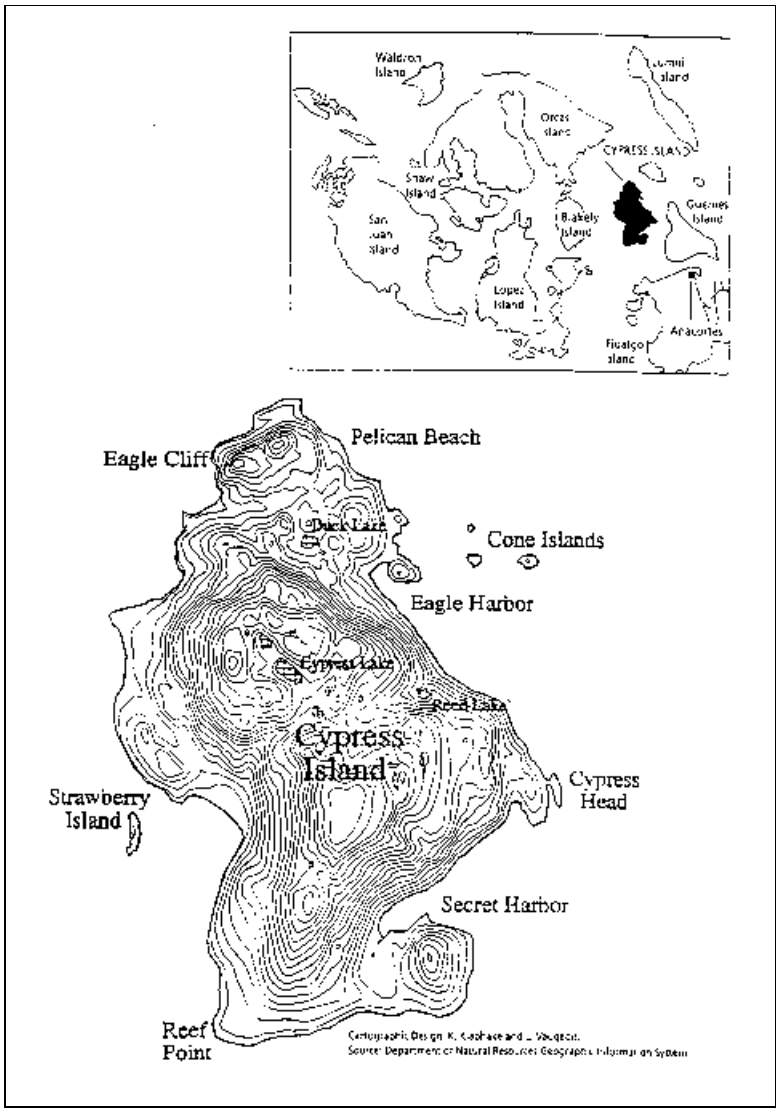
SUBTIDAL		INTERTIDAL		UPLAND		TOTAL	Shoreline
included (yes / no)	acres (if known)	included (yes / no)	acres (if known)	included (yes / no)	acres (if known)	ACRES	Length
no	0	yes	unknown	yes	unknown	3587	unknown

Goals/Purpose/Objectives: As with all NRCAs, the primary management goals at Cypress Island NRCA are to: (1) maintain, enhance and restore ecological systems; (2) maintain exceptional scenic landscapes; (3) maintain habitat for threatened, endangered and sensitive species; (4) provide opportunities for low impact public use; (5) provide opportunities for outdoor environmental education; and (6) identify and protect cultural resources (DNR 1996a). A future objective of the NRCA involves the identification and protection of sensitive marine resources within an expanded marine boundary area (DNR 1996a).

Legal Jurisdiction/Authority

The Washington Natural Resources Conservation Areas (NRCA) Act of 1987 (RCW 79.71). The Washington Aquatic Lands Act (RCW 79.90 - 79.96).

Map 40. Cypress Island Natural Resources Conservation Area



Source: (DNR 1996a)

Natural and Cultural Resource Values/Highlights

At 5500 acres, Cypress island is the largest remaining undeveloped island in the San Juan archipelago, featuring an extensive area of undeveloped shorelines and uplands. Upland natural resource highlights include: high quality coniferous forests; various wetland ecosystems; grassland communities; and habitat for two federally threatened and endangered bird species (bald eagle and peregrine falcon). Seven tribal prehistoric resource sites have been recorded on the island with the Office of Archaeology and Historic Preservation (OAHP). Unique geologic formations can also be found on the island (DNR 1996a).

The recently finalized Cypress Island NRCA Management Plan (1996) acknowledges that the "marine area surrounding the island is a flourishing habitat of native aquatic plants and marine-

dependent animals" (DNR 1996a). However, much remains unknown about the marine resources surrounding the island. A 1992 biological inventory report for the NRCA acknowledged that a systematic marine survey had not yet been done, and recommended that an intertidal and subtidal survey been completed (Sheehan et al. 1996). Also recommended were the implementation of monitoring regimes in marine areas of high diversity or critical for spawning and reproduction (Sheehan et al. 1996). Drawing from data collected for the 1987 Puget Sound Environmental Atlas (Evans-Hamilton 1987), the 1992 biological inventory for this site noted the general locations of small eelgrass beds, red rock and Dungeness crab, sea urchins and sea cucumbers, abalone and scallops (Sheehan et al. 1992). There are also areas of concentrated recreational salmon fishing near Strawberry Bay north to the northeast corner of Cypress Island, and from Cypress Head to the southeast corner of the island (see **Map 40**) (Sheehan et al. 1992). Reef fish are found around Towhead Islands and the Cone Islands, while bottomfish have been mapped as occurring in Rosario Strait (Evans-Hamilton 1987; Sheehan et al. 1992). Harbor porpoise and minke whales are found off the west side of the Island on a regular basis, while harbor seals have been seen hauled out near Smuggler's Cove and Towhead Island (Sheehan et al. 1992). Nests of marine-dependent birds such as pigeon guillemots and double-crested cormorants have been observed on Strawberry and Cone Islands (Sheehan et al. 1992).

The recent 1996 management plan for Cypress Island NRCA also acknowledges that intertidal and marine resources have yet to be systematically surveyed (DNR 1996a).

Restrictions on Human Activities to Protect Marine Resources

There are currently no restrictions introduced by way of the designation and management of the Cypress Island NRCA that pertain specifically to human activities in intertidal or marine areas. For example, fishing, shellfishing, or other marine biota collection regulations are not put in place by the NRCA. However, the tidelands and bedlands surrounding the island are part of the San Juan Islands and Cypress Island Marine Biological Preserve (see Site 6), which prohibits the gathering of marine biological materials, except for food, kelp, or with the permission of the Director of the University of Washington’s Friday Harbor Laboratories (RCW 28B.20.320).

The Cypress Island NRCA does prohibit pack animals, bicycles, and all motorized and non-motorized vehicles (DNR 1996a). There are also designated pet areas and leash requirements (DNR 1996a).

MANAGEMENT OF THE SITE

Planning

The Cypress Island Natural Resources Conservation Area Management Plan was finalized in June of 1996. Staff at DNR worked with an 11 member citizens advisory committee, identifying issues, goals, objectives and management decisions through an internal and 18 month public scoping process (DNR 1996a). Significant resources to be conserved were identified as called for by the NRCA Act (RCW 79.71.070), with preliminary studies focusing on archaeology, history since European settlement, soils, geology, water resources and ecology.

Current phase one management emphasis for the NRCAs marine area, which is limited to approximately 50% of the island's tidelands, is placed on "protecting the island ecosystem; and providing important opportunities for research, education, recreation and scenic appreciation" (DNR 1996a).

Yet Cypress Island NRCA has the potential to become a larger and well-planned marine protected area, complete with subtidal components. The 50- to 100-year vision statement for the NRCA envisions marine resources protected through the appropriate installation of buoys and designation of public use areas and activities. (DNR 1996a). Current plans for the site indicate a phase two commitment to future evaluation of the marine resources and threats surrounding the island (DNR 1996a), and initial steps toward this end are currently underway at DNR (Randlette, personal communication 1996). Based on this assessment, particularly sensitive marine areas are planned to be added to the NRCA in the future (DNR 1996a). A specific phase two objective of the current management plan is to "minimize impacts to known eelgrass and kelp beds by controlling moorage practices", which may include the installation of buoys (DNR 1996a). Marine habitat studies are needed, including an evaluation of the rate and potential impacts of shellfish harvest on public tidelands (DNR 1996a). The current management plan also calls for DNR to work with the Washington Department of Fish and Wildlife (WDFW) and local tribes to develop marine hunting and fishing that is consistent with NRCA objectives (DNR 1996a).

Supervision/Enforcement

DNR management staff make periodic management visits, monthly in summer and once every two months during other times of the year (Hixson 1996). During the summer, a DNR staff member remains on site (Hixson 1996).

Signage is present on the island for both interpretive and enforcement purposes (Hixson 1996). The aim of DNR management is to present use restrictions and regulations to users within an environmental education context, seeking to convey a conservation ethic (DNR 1996a). As state-owned bedlands are added to the NRCA, phase two objectives of the current management plan call for the placement of buoys, as needed, to reduce impacts to sensitive aquatic resources (DNR 1996a).

Additional Programs: Research, Monitoring, Education, Outreach, Public Involvement

NRCAs such as Cypress Island are not designated for the specific purpose of serving as a scientific research area or reserve. However, the role of on-site research and monitoring is clearly acknowledged at Cypress Island NRCA as being critical for meeting many of the site's primary objectives, such as: closely monitoring public use and DNR activities for effects on resources; inventorying and monitoring of native species; and inventorying threatened and endangered species (DNR 1996a). The current management plan for this site identifies a list of monitoring and research needs for the NRCA, and notes that the list will be maintained and referenced when funding opportunities or research requests arise (DNR 1996a).

Providing opportunities for outdoor environmental education is a primary goal of NRCAs. This involves the placement of interpretive signs as well as educational facilities for informing the public of the site's outstanding features (DNR 1996a). A specific objective of the site’s

management plan calls for the development of "a public education program to encourage non-consumptive appreciation of the marine environment (DNR 1996a).

For More Information:

Washington Department of Natural Resources
Forest Resources Division
1111 Washington St. SE
P.O. Box 47027
Olympia, WA 98504-7027
Telephone: (360) 902-1000
http://www.wa.gov/dnr/htdocs/fr/nhp/wanrca.html

39. Woodard Bay

Natural Resources Conservation Area

Date(s) of Establishment: 1987

Establishing Agency/Organization(s): Washington Department of Natural Resources (DNR)

Managing Agency/Organization(s): Washington Department of Natural Resources (DNR)

County: Thurston

Location/Vicinity: North of Olympia in northern Thurston County, on Henderson Inlet, located north of Budd Inlet (**Map 41**).

Marine Boundary Description/Discussion: The site's boundary is based upon ecological considerations, and DNR has worked to acquire most of the parcels within the boundary (DNR 1996c; Durham, personal communication 1997a). The marine boundary extends along Henderson Inlet north of Chapman Bay and south of Woodard Bay, approximately 50 feet into the marine area (see **Map 41**); in some places, the marine boundary fronts privately owned uplands (Durham, personal communication 1997b). There are remnants of log booms, walkways, and floats that are outside the Natural Resources Conservation Area (NRCA) boundary, but use of these features is still managed by DNR to protect resources and minimize impacts on the aquatic ecosystem (DNR 1996c). The aquatic lands are owned by DNR (Durham, personal communication 1997a).

Adjacent or Overlapping Marine Protected Areas: None.

Current Size and Components

SUBTIDAL		INTERTIDAL		UPLAND		TOTAL	Shoreline
included (yes / no)	acres (if known)	included (yes / no)	acres (if known)	included (yes / no)	acres (if known)	ACRES	Length (if known)
no	N/A	yes	unknown	yes	unknown	650	unknown

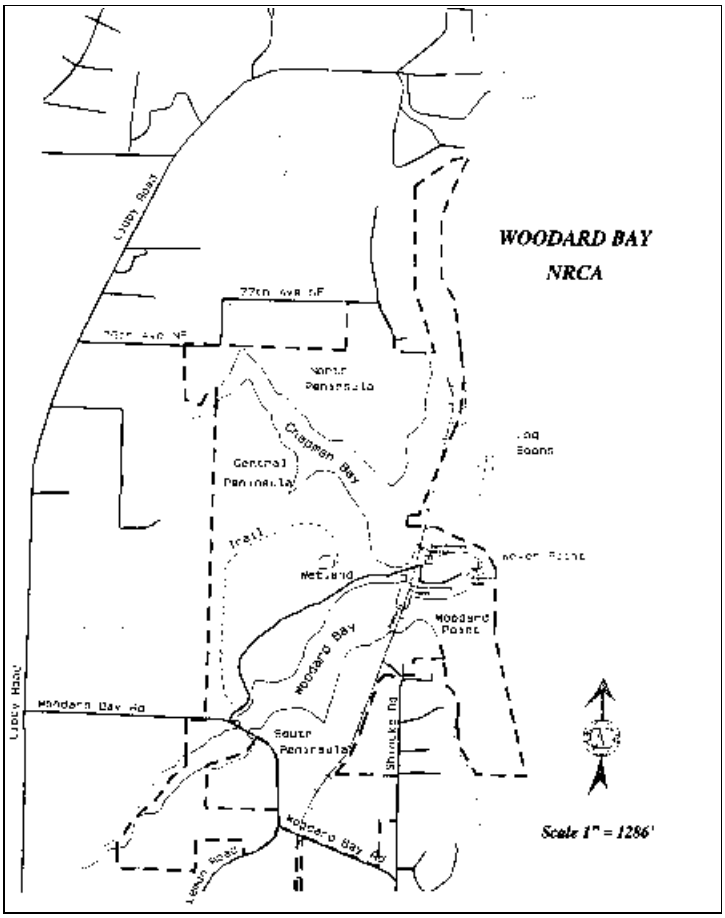
Goals/Purpose/Objectives: The primary purpose of the NRCA program is to protect outstanding examples of native ecosystems and habitat for endangered, threatened, and sensitive plants and animals. Opportunities will be provided for environmental education and low-impact public use where such uses do not negatively impact the resources. Natural resource protection has the highest priority (DNR 1992b).

The Woodard Bay site was selected as a NRCA because of its relatively undisturbed ecosystems in a rapidly developing area (DNR 1996c).

Primary Legal Authority

RCW 79.71— Washington Natural Resources Conservation Area Act: created the NRCA program and designated this site;
RCW 79.90 - 79.96 — Washington Aquatic Lands Act.

Map 41. Woodard Bay Natural Resources Conservation Area



Source: (DNR 1992b)

Natural and/or Cultural Resource Values/Highlights

The ecosystems here are relatively undisturbed, and include beaches, tidelands, large trees, mature second growth forest, freshwater wetlands, and two small streams, as well as two man-made habitats. Species utilizing these habitats, as recorded in documentation for the site, include a variety of birds (listed below), river otters; ghost shrimp, mussels, barnacles and other shellfish; anadromous fish; mergansers, cormorants, buffleheads, song birds, deer, bats, and seals. The seals favor the log booms just outside the NRCA boundary. The sandy clay banks at Weyer Point provide important burrow and nesting habitat for the seabirds, and waterfowl use the area near the trestle (DNR 1996c).

A 1988 bird survey for the site by Wright and Clifford (1989) identified the following species:

Common loon (*Gavia immer*)
Red-Throated loon (*Gavia stellata*)
Yellow-billed loon (*Gavia adamsii*)
Horned grebe (*Podiceps auritus*)
Red-necked grebe (*Podiceps grisegena*)
Double crested cormorant (*Phalacrocorax auritus*)
Pelagic cormorant (*Phalacrocorax pelagicus*)
Great blue heron (*Ardea herodias*)
Green-winged teal (*Anas crecca carolinensis*)
Mallard (*Anas platyrhynchos*)
Gadwall (*Anas strepera*)
American wigeon (*Anas americana*)
Canvasback (*Aythya valisineria*)
Greater scaup (*Aythya marila*)
Surf scoter (*Melanitta perspicillata*)
White-winged scoter (*Melanitta fusca*)
Common goldeneye (*Bucephala clangula*)
Barrow's goldeneye (*Bucephala islandica*)
Bufflehead (*Bucephala albeola*)
Hooded merganser (*Lophodytes cucullatus*)
Red-breasted merganser (*Mergus serrator*)
Bald eagle (*Haliaeetus leucocephalus*)
Red-tailed hawk (*Buteo jamaicensis*)
Semipalmated plover (*Charadrius semipalmatus*)
Killdeer (*Charadrius vociferus*)
Greater yellowlegs (*Tringa melaanoleucus*)
Lesser yellowlegs (*Tringa flavipes*)
Spotted sandpiper (*Actitis macularia*)
Dunlin (*Calidris alpina*)
Least sandpiper (*Calidris minutilla*)
Bonaparte's gull (*Larus philadelphia*)
Pigeon guillemot (*Cepphus columba*)
Mew gull (*Larus canus*)
Rock dove (*Columba livia*)
Glaucous-winged gull (*Larus glaucescens*)
Western gull (*Larus occidentalis*)

Native American archaeological sites have been identified at this site. There are also remnant structures and two houses remaining from the Weyerhaeuser South Bay Log Dump, which was formerly located here for more than 60 years (DNR 1996c; Wright and Clifford 1989).

Low impact public use, such as hiking, photography, and nature study are allowed in certain areas, and nearby parking is available (DNR 1996c). Tribal fishing and shellfishing rights guaranteed by treaty, such as that of the Squaxin Tribe, are in force here.

Restrictions on Human Activities to Protect Marine Resources

Public use is prohibited in the uplands at the following portions of the site: North Peninsula, portions of Central Peninsula, South Bank at Weyer Point, and portions of South Peninsula. For the marine areas, marine use is discouraged, and beaching and launching boats is prohibited at Chapman Bay/Sleepy Creek (DNR 1996c). At Woodard Bay, beaching and launching watercraft are permitted from one location April through August only; beaching and launching are prohibited the remainder of the year at this location and year round in the rest of Woodard Bay to protect sensitive wildlife species (Durham, personal communication 1997b). At the log booms, public use is prohibited. In addition, all marine uses are *discouraged* within 50 feet of the south bank at Weyer Point in Woodard Bay (DNR 1996c).

Signs are normally posted describing prohibited uses and the legal distance one must stay away from marine mammals, but are routinely torn down. A perimeter boom formerly prevented water access in the area around the boom, but it was destroyed by winter storms and has not been replaced due to lack of funding (Durham, personal communication 1997a).

Mining activities are not allowed where DNR possesses the mining rights, and DNR will not allow commodity-based activities to occur if they compromise the site's resource values. However, DNR does not own the mineral rights for the majority of the uplands at this site. Aquaculture is a potentially allowable use, but currently the site is not suitable for aquaculture due to high fecal coliform levels (DNR 1996c).

MANAGEMENT OF THE SITE

Planning

The management of all Natural Resources Conservation Areas is guided by the NRCA Statewide *Management Plan*, which was developed by an Advisory Committee with public participation in 1992 (DNR 1992b). Each individual NRCA is also required to have a site management plan. For Woodard Bay NRCA, there is a draft management plan that has been developed with the Woodard Bay Site Advisory Committee. The Advisory Committee, appointed by the state's Commissioner of Public Lands, is composed of area residents, local and state government staff (DNR 1996c). At this time, DNR is managing the site in accordance with the draft management plan (Durham, personal communication 1997a), which will become final upon receiving the signature of the Commissioner of Public Lands. The draft plan has been through a public review and the State Environmental Policy Act compliance process. Once final, the plan will be reviewed every five years (DNR 1996c).

The site's *Management Plan* states that natural processes are to proceed uninterrupted, where possible, though restoration may be undertaken in disturbed areas. Resource protection is given the highest priority, but where appropriate, exceptional open viewing areas should be maintained, education facilities should be provided, and low impact public use should be allowed (DNR 1996c). In order to ensure public use is appropriate, an interpretive plan is being developed. One of the recommendations will be to provide a place for kayakers to tie up so they can view seals from a proper distance (Durham, personal communication 1997a).

To protect the wetland resources, the site's *Management Plan* recommends directing the public to stay on trails and prohibiting access to the North Peninsula; removal of exotic vegetation that disrupts natural processes; and engaging in basin-wide planning and water quality monitoring. To protect the intertidal and estuarine areas, the plan calls for a prohibition on the construction of private docks and enlargement of existing docks; controlling invasion of exotic plan species (on DNR-managed tidelands); and ensuring management of marine waters outside the NRCA boundaries is consistent with NRCA goals (DNR 1996c).

As with all Natural Area Preserves and Natural Resources Conservation Areas, if DNR receives a lease application involving tidelands adjacent to these protected area sites, consultation takes place with the DNR Special Lands Division to discuss the proposed use of the tidelands and impacts at the site (Powell, personal communication 1997). This is one means by which DNR attempts to ensure management outside protected area boundaries is consistent with the Woodard Bay NRCA goals.

Where possible, DNR will acquire the remaining acreage within the NRCA boundaries from willing sellers, or pursue conservation easements (DNR 1996c).

Supervision/Enforcement

A DNR District Manager lives on site and reports any management problems observed to the DNR natural area manager assigned to the site. The natural area manager and other DNR staff visit the site weekly in the summer and few times per month the rest of the year. There are no regular volunteer groups that work at this site, though Eagle Scout groups occasionally work on upland trails (Durham, personal communication 1997a).

This site is popular with the public for marine use. The area is used by kayakers and other small boats, some occasionally drawing near to view seals. While some users do not comply with the restrictions, enforcement is difficult. DNR staff here do not have a boat, but are sometimes assisted by United States Fish and Wildlife Service staff, who are on the water monitoring birds in the area (Durham, personal communication 1997a).

Additional Programs: Research, Monitoring, Education, Outreach, Public Involvement

Sensitive resources are monitored for impacts from public use and to gauge ecosystem health, and surveys are aimed at identifying habitat for newly listed species. Baseline studies (Wright and Clifford 1989) have identified sensitive resources and special populations at Woodard Bay, including Bald Eagles, Great Blue Herons, seals, bats, shoreline archeological sites, wetlands and marine bluffs (DNR 1996c).

At this time, DNR staff are studying the site's bat population, and Washington Department of Fish and Wildlife staff monitor the seal population. In addition, scientists from other organizations may submit proposals to DNR to conduct studies here (DNR 1996c).

Educational efforts are aimed at providing the public with a sense of stewardship for the site (DNR 1996c). A DNR interpretive staff member formerly worked at the site, but funding is not currently available to support this position. There are also plans to establish a Friends of Woodard Bay group, dependent upon available funding (Durham, personal communication 1997a).

For More Information: Department of Natural Resources, Chehalis Region office
1405 Rush Rd.
Chehalis, WA 98532 Telephone: (360) 748-2383

40. Dungeness

National Wildlife Refuge

Date(s) of Establishment: January 20, 1915 (by Executive Order); tidelands acquired in 1943, and other additions to uplands made subsequently.

Establishing Agency/Organization(s): U.S. Fish and Wildlife Service

Managing Agency/Organization(s): U.S. Fish and Wildlife Service

County: Clallam

Location/Vicinity: Near Sequim in Clallam County, on the Strait of Juan de Fuca.

Marine Boundary Description/Discussion: The Dungeness National Wildlife Refuge boundary extends to extreme low tide, and encompassing tidelands on the outer side of Dungeness Spit (the Strait of Juan de Fuca side), around the tip to the Dungeness Bay side, and within Dungeness Harbor. The Refuge includes some noncontiguous tideland parcels off of Cline Spit and to the west of Cline Spit at the base of the cliffs (**Map 42**).

Adjacent or Overlapping Marine Protected Areas: None

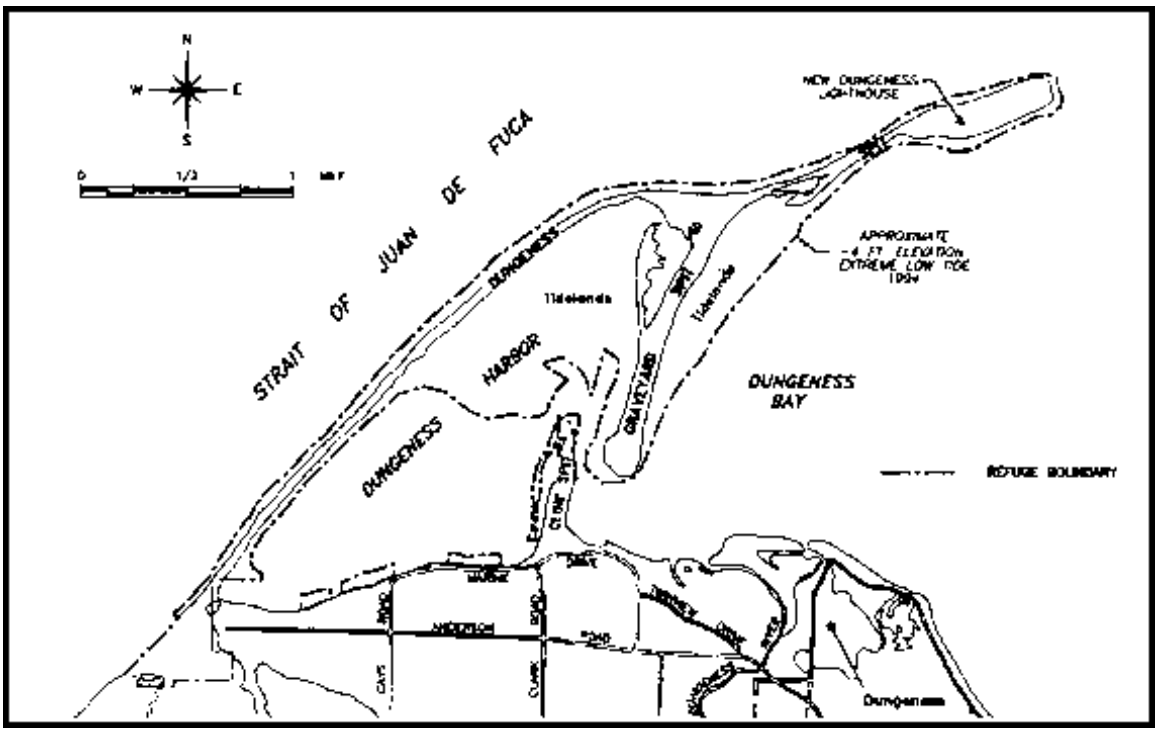
Current Size and Components

SUBTIDAL		INTERTIDAL		UPLAND		TOTAL ACRES	Shoreline Length (if known)
included (yes / no)	acres (if known)	included (yes / no)	acres (if known)	included (yes / no)	acres (if known)		
no	N/A	yes	unknown	yes	unknown	631	75,966 ft.

Goals/Purpose/Objectives:

The mission of the NWR System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (USFWS 1997c).

Map 42. Dungeness National Wildlife Refuge.



Source: (USFWS 1997b)

The following are long range goals of the NWR System:

- To preserve, restore, and enhance in their natural ecosystem (when practicable) all species of animals and plants that are endangered or threatened with becoming endangered;
- To perpetuate the migratory bird resource;
- To preserve a natural diversity and abundance of fauna and flora on refuge lands;
- To provide an understanding and appreciation of fish and wildlife ecology and people's role in their environment, and to provide refuge visitors with high quality, safe, wholesome and enjoyable recreational experiences oriented toward wildlife, to the extent these activities are compatible for which the refuge was established (USFWS 1997b).

Specific objectives for Dungeness NWR, listed in order of highest to lower priority, are:

(1) To provide and preserve habitat for the enhancement of wintering waterfowl and other migratory birds with emphasis on black brant;

(2) To protect and maintain natural habitats capable of supporting a diversity of wildlife;

(3) To provide public information, interpretation, and education on the wildlife resources of the Refuge;

(4) To provide wildlife-oriented recreation; and

(5) To cooperate with other agencies, educational institutions, and private organizations and individuals in providing technical assistance and research opportunities consistent with Refuge objectives and management needs (USFWS 1997b).

Primary Legal Authority

National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57);
Refuge Recreation Act of 1962 (U.S.C. 460k-460k-4);
Refuge Trespass Act of 1909.

Natural and/or Cultural Resource Values/Highlights

Dungeness NWR provides habitat for a diverse number of wildlife species, including over 250 species of birds, eight species of marine mammals and 41 species of land mammals. Eelgrass beds and tidal mudflats along the inner Bay are important feeding and roosting areas for a variety of waterfowl, such as migratory black brant. Shorebirds, seabirds and other bird species are also found here. Harbor seals use the end of Dungeness Spit for hauling out and pupping. Tideflat areas support crabs, clams and other shellfish, while open waters of Dungeness Bay and Harbor are used by salmon and other fish species (USFWS 1997b). Endangered peregrine falcons and threatened bald eagles, marbled murrelets and western snowy plovers have all been recorded at the Refuge (USFWS 1997b).

The Refuge includes a number of habitats, including: sand and cobble beaches, tidal mudflats, two spits, a tidal pond, and forested upland (USFWS 1997b). Dungeness Spit is one of the longest natural spits in the world (U.S. Department of the Interior N.d.). Graveyard Spit is classified a Research Natural Area because of its unique vegetation; the classification means that there will be no human management of the natural processes there (USFWS 1997b).

The spits are known to be S'Klallam tribe burial grounds. There is also a lighthouse and residence, which are on the National Register of Historic Places (USFWS 1997b).

Restrictions on Human Activities to Protect Marine Resources

As an increasingly popular destination for visitors, Dungeness NWR accommodates a wide variety of human activities. These include: hiking, walking, boating, wildlife observation and photography, horseback riding, fishing, shellfishing, and other recreational beach activities. Refuge visitation has increased significantly in recent years, rising 67% between 1988 and 1994 to an annual level of 110,000 visitors. During this same period, use by wildlife declined (USFWS 1997b).

As a result of the planning process (described below under "Planning"), in May, 1997, new regulations went into effect at the Refuge (Sanguinetti, personal communication 1997). The Refuge was split into four zones, with Zone 4 being closed to public use altogether, and other uses permitted in the other zones depending upon season. Prohibited in all zones at all times is the use of jetskis and windsurfing. Regarding the other restrictions, hiking, wildlife photography and observation, jogging, beach use and horseback riding are allowed with certain limitations by

zone and time of year. Specific to the marine area, are restrictions on swimming; saltwater fishing, and shellfishing, which are also restricted by zone and time of year. Boating, both motorized (no wake) and nonmotorized, are prohibited in all areas except for Zone 3, where boating is permitted on the tidelands east and west of Graveyard Spit, outside the 100 yard buffer between May 15 and September 30. Beach landing by boat is prohibited in all zones at all times except for in Zone 3, where it is permitted by reservation only year round in a 100 yard zone on the Bay side of the Spit near the lighthouse (USFWS 1997b).

Uses that were not restricted as a result of the Environmental Assessment were environmental education, tribal fishing, research, fishing enhancement, and permitted special uses (USFWS 1997b).

Two areas within the Refuge, the tideland parcel near Cline Spit and the three tideland parcels near the south end of Dungeness Harbor are said to be "currently administratively uncontrollable," and were not included in the 1997 assessment of the Refuge (USFWS 1997b).

The Refuge is open daily during daylight hours, and a small fee or pass is required. Pets are prohibited (U.S. Department of the Interior, N.d.).

MANAGEMENT OF THE SITE

Planning

In January of 1997, a revised management plan to address public use of the Dungeness NWR was completed through a public process, which included public scoping meetings and forums, mailings, and pubic comment on the draft Environmental Assessment (USFWS 1997b). This assessment included input by other Federal agencies, State, tribal, and local agencies; private groups; and individuals (USFWS 1997b). There was a great deal of debate regarding restricting public use.

The need for revising the management plan centered on concerns about increases in public visitation and a decline in use by wildlife, including black brant, other waterfowl and harbor seals. Specific issues of concern are: (1) disturbance of black brant, other waterfowl and shorebirds by increased public use activities; (2) disturbance of harbor seals at the tip of Dungeness Spit; and (3) non-wildlife-dependent recreational activities reducing the quality of experience for visitors engaged in wildlife observation (USFWS 1997b).

The outcome of the planning process for public use at Dungeness NWR attempts to address the challenge of meeting the needs of wildlife (the primary purpose of the NWR) while ensuring allowed public use activities are compatible, giving priority to wildlife-dependent uses (USFWS 1997b).

USFWS has a number of partners it works with to manage the resources at Dungeness Spit. It has a Memorandum of Understanding with the U.S. Coast Guard, allowing that agency to maintain aids to navigation (USFWS 1997b). Lighthouse maintenance is provided by volunteers from the New Dungeness Lighthouse Society. The Washington State Department of Ecology's role is protection of marine resources; the National Marine Fisheries Service protects marine

mammals. The Jamestown S'Klallam tribe helps protect the Dungeness River watershed (Edens 1997b in MPA Survey 1996). The Olympic Peninsula Audubon Society provides volunteer support, biological information, and advocacy for USFWS plans and objectives, when needed (Edens 1997b in MPA Survey 1996; Takekawa, personal communication 1997a).

Supervision/Enforcement

Year-round staff on site include a refuge manager, biologist, and volunteer caretaker. Additional supervision, maintenance and public education services are provided by a weekend park ranger, maintenance staff, and some 35 summer volunteers (who are at the Refuge daily) (Edens 1997b in MPA Survey 1996). The Refuge Manager and the Assistant Complex Manager (based at USFWS's Nisqually Complex) provide part time enforcement of regulations, other enforcement officers based in Olympia are available if needed (Sanguinetti, personal communication 1997). Education and signs are also used to encourage people to comply to the regulations (Edens 1997b in MPA Survey 1996), and written handouts are given to visitors to inform them of the regulations (Sanguinetti, personal communication 1997).

There is a rarely used cooperative agreement between the USFWS and Olympic National Park, for Park staff to respond, as needed, to enforcement calls at Dungeness.

Additional Programs: Research, Monitoring, Education, Outreach, Public Involvement

Annual bird surveys are conducted at the Refuges (Wingrove 1996), and monitoring is also done. Approximately once a year, the USFWS involves the public to assist in cleanup of marine debris from the beaches (Sanguinetti, personal communication 1997). One employee conducts outreach for eight National Wildlife Refuges in the Refuge Complex.

For More Information:

U.S. Fish and Wildlife Service
Washington Coastal Refuges
33 So. Barr Road
Port Angeles, WA 98362

Telephone: (360) 457-8451
Fax: (360) 457-9778
http://www.dungeness.com/refuge/

41. Nisqually

National Wildlife Refuge

Date(s) of Establishment: 1974

Establishing Agency/Organization(s): United States Fish and Wildlife Service (USFWS)

Managing Agency/Organization(s): United States Fish and Wildlife Service (USFWS)

Counties: Thurston and Pierce

Location/Vicinity: At the south end of Puget Sound, about 10 miles east of Olympia on the Nisqually Delta.

Marine Boundary Description/Discussion: The Refuge includes estuaries, tidal flats and freshwater marshes at the Nisqually Delta. The Refuge includes intertidal areas but not the subtidal zone. Data on the exact seaward extent of the intertidal boundary is not currently available (**Map 43**).

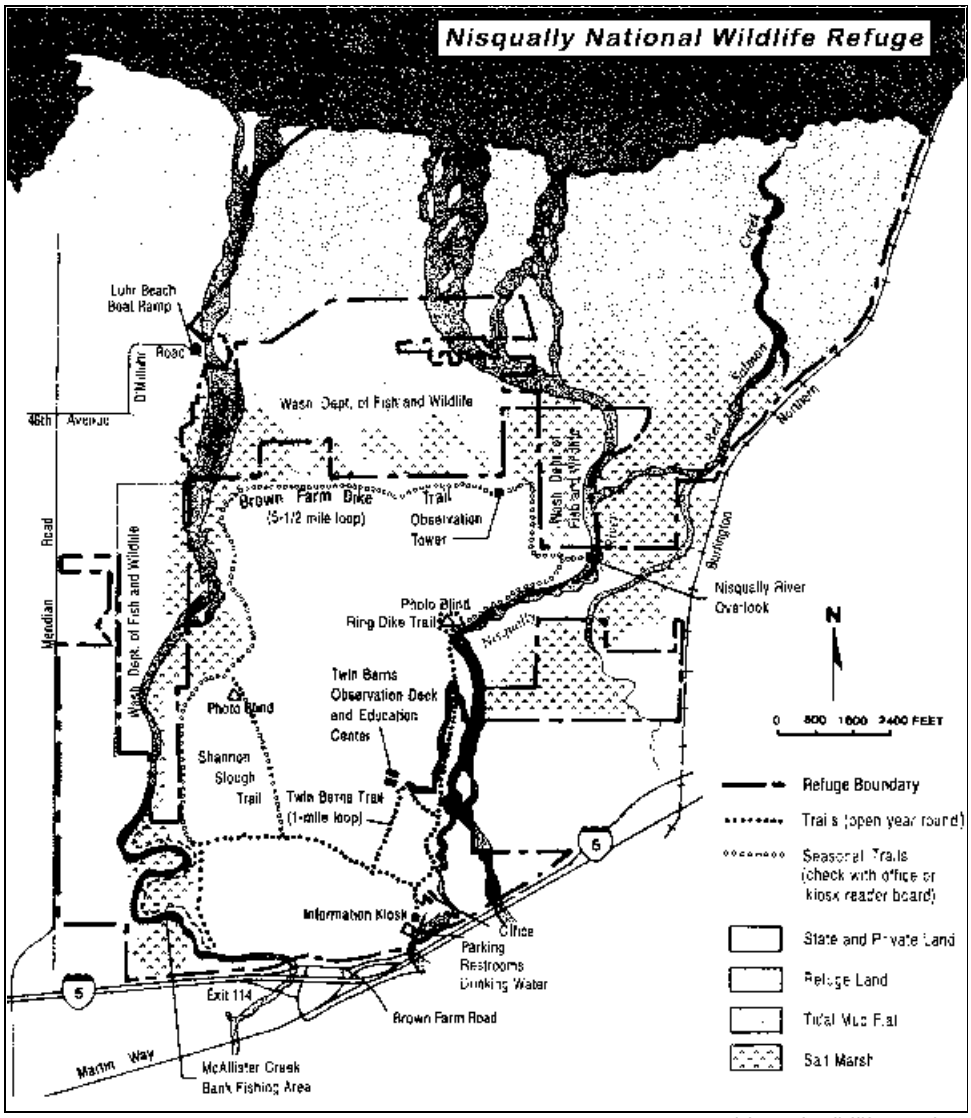
Adjacent or Overlapping Marine Protected Areas: None

Current Size and Components:

SUBTIDAL		INTERTIDAL		UPLAND		TOTAL	Shoreline
included (yes / no)	acres (if known)	included (yes / no)	acres (if known)	included (yes / no)	acres (if known)	ACRES	Length (if known)
no	N/A	yes	unknown	yes	unknown	2973	unknown

Though current acreages are not available for intertidal and upland components, that information will become available within the next year when the USFWS completes development of a GIS system. Within the total approved boundary area of 4,016 acres (of which 2,973 acres are Refuge property), in 1992, there were 1,270 acres of mudflats (34.1% of total); 715 acres of salt marsh (17.8% of total); and 200 acres of tidally influenced fresh and salt water (5.0% of total) (USFWS 1992b). Since that time, an additional unit of land was approved for inclusion within the Refuge boundaries; the unit is on the Black River, and contains the wetlands and riverine system south of Black Lake in Olympia (Takekawa, personal communication 1997b).

Map 43. Nisqually National Wildlife Refuge



Source: U.S. Fish and Wildlife Service

Goals/Purpose/Objectives:

The mission of the NWR System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (USFWS 1997c).

The following are long range goals of the NWR System:

- To preserve, restore, and enhance in their natural ecosystem (when practicable) all species of animals and plants that are endangered or threatened with becoming endangered;
- To perpetuate the migratory bird resource;
- To preserve a natural diversity and abundance of fauna and flora on refuge lands;
- To provide an understanding and appreciation of fish and wildlife ecology and people's role in their environment, and to provide refuge visitors with high quality, safe, wholesome and enjoyable recreational experiences oriented toward wildlife, to the extent these activities are compatible for which the refuge was established (USFWS 1997b).

Nisqually NWR strives to provide visitors with recreational experiences oriented toward wildlife to the extent that these activities are compatible with conservation objectives (such as preservation of migratory bird resources and protection of endangered and threatened species). Preservation of this site helps secure it as a wintering area for waterfowl (USFWS 1996c). The site was originally chosen to be a refuge because of the diversity of habitats, the importance of the habitats for waterfowl in the Pacific Flyway, and the potential for habitat enhancement; also, there was a proposal to build a deepwater port at the mouth of the Nisqually River (USFWS 1992b). These plans did not go forward after the Refuge was designated.

Primary Legal Authority

National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57);
Refuge Recreation Act of 1962 (U.S.C. 460k-460k-4);
Refuge Trespass Act of 1909.

Natural and/or Cultural Resource Values/Highlights

The Nisqually NWR features various habitats contained in the Nisqually Delta: estuaries, open water, mudflats, salt marsh, freshwater marshes, dikes, grasslands, cropland shrubs, and riparian woodlands (USFWS 1992b; 1996c). The Nisqually Delta is one of the largest remaining undisturbed estuaries in Western Washington. The Refuge preserves important habitat for waterfowl, shorebirds, raptors and water birds, (USFWS 1996c) including bald eagles, a colony of great blue herons (which nest along McAllister Creek) (Pierce County 1996), osprey (USFWS 1990a), dunlins, short billed dowitchers, Canada geese, and peregrine falcons (Gordon 1995).

Because the Nisqually Delta is recognized for supporting one of the five best known examples of Washington-Oregon Salt Marsh Subtheme in the North Pacific Border Region, and in recognition of the major resting area provided at the Delta for migratory waterfowl in southern Puget Sound,

the salt marsh area outside the Brown Farm dike is designated as a National Natural Landmark[26] (NPS 1997).

McAllister Creek and Nisqually River serve as spawning, rearing and passage areas for anadromous fish such as salmon and steelhead (USFWS 1990a; 1996c). The Puget Sound waters of the Nisqually Reach are occasionally visited by gray whales, Orcas and sea lions (Pierce County 1996). Thirty five species of fish are known to be found in the Refuge's waters (Sprehn 1993).

The mudflats and salt marshes of the Refuge provide excellent habitat for fish, birds, and invertebrates. The mudflats and channels support crabs, shrimp, snails, worms, geoduck, and other invertebrates. Salt marsh plants found at the Refuge include pickleweed, tufted hairgrass, slough sedge, and other salt-tolerant plants (Gordon 1995).

Figure 18. Fishing Access Directory Sign at Entrance to Nisqually National Wildlife Refuge.

Photo: Murray, 1997

The Nisqually NWR is most popular for wildlife observation and hiking (Takekawa, personal communication 1997b). Fishing and shellfish harvest are also popular activities, carried out by both the Nisqually Tribe and the public. The Nisqually Tribe operates a commercial gill net fishery for salmon. McAllister Creek and the Nisqually River are frequented by recreational anglers in pursuit of salmon and trout, while tideland areas support bottomfish angling and recreational shellfish harvest. (USFWS 1983).

[26] As defined by the National Park Service, a National Natural Landmark is a nationally significant natural area, designated by the Secretary of the Interior, representing one of the best examples of a type of biotic community or geologic feature in its physiographic province. The National Natural Landmarks Program is not a land taking or withdrawal program; it does not change the ownership of a site and does not dictate activity. The National Natural Landmark Program recognizes and encourages the voluntary, long-term commitment of public and private owners to protect an area's outstanding values (NPS 1997).

Restrictions on Human Activities to Protect Marine Resources

Public use restrictions are generally directed at minimizing disturbances to wildlife and habitat. To this end, pets, firearms, bicycles, fires and camping are prohibited, and active sport activities are discouraged (USFWS 1996a). Restrictions specifically emphasizing marine resource protection are those prohibiting bank fishing anywhere along the Nisqually River at the Refuge and inside the diked area.

While hunting is not allowed on National Wildlife Refuge lands (USFWS 1996b), there are some open hunting areas within the boundaries of the Nisqually NWR. Subject to state regulations, the Nisqually Wildlife Area, which is within the approved Refuge boundary but represents lands owned and managed by WDFW, is open to waterfowl hunting by boat access only (USFWS 1996b). Boats may be launched off site at a nearby State-owned boat launch (Takekawa, personal communication 1997b). During the hunting season, the Refuge's dike trail adjacent to this hunting area is closed (USFWS 1990b).

The Refuge is open daily during daylight hours, and a small fee or pass is required (USFWS 1996a). Approximately 70% of the Refuge entrance fee is set aside for land acquisition via the Migratory Bird Fund; 30% is used by the Nisqually National Wildlife Refuge for operations (Sprehn 1993).

MANAGEMENT OF THE SITE

Planning

In 1969, the Washington State Department of Game bought 620 acres of the Nisqually River Delta. Two years later, the area outside the farm dike was designated a National Natural Landmark (Gordon 1995). The Nisqually National Wildlife Refuge was established by Congress and the land purchased by the U.S. Fish and Wildlife Service in 1974 as a result of citizen based activism by the Nisqually Delta Association and other groups (Pierce County 1996; Gordon 1995). Environmental groups and citizen activists continue to work with local congressional representatives to secure funds for the continued expansion of the Refuge by acquiring adjacent lands (Nisqually River Council 1993).

In 1985, the Washington State Legislature provided the Department of Ecology with a mandate to develop an overall management plan for the Nisqually River Basin. With USFWS participation, the plan was completed in 1987. The plan called for the formation of a Nisqually River Council to balance economic, cultural, and natural resource needs. The Council has since been formed, and includes participation from the USFWS (USFWS 1992b).

A fishing plan was developed for the Refuge that closed all bank fishing areas along the Nisqually River and all areas inside the dike; fishing is allowed only along McAllister Creek (USFWS 1983; USFWS 1996a). Factors considered in the development of this plan included loss the of river bank area, unsafe conditions, use of bank habitat by fish and wildlife, limitations of USFWS administrative control, and the potential for conflicts between various users of the Refuge and adjacent areas (bank and boat-based recreational and Tribal fishers, hunters, and other visitors) (USFWS 1983). Tideland areas of the Refuge remain completely open to recreational fishing and

shellfish harvest activities, subject to applicable WDFW regulations, though access is not permitted from the dike trail (USFWS 1996a).

The USFWS has plans to do comprehensive conservation planning for the National Wildlife Refuges; all plans nationwide are expected to be completed within 15 years. Planning for Nisqually National Wildlife Refuge has begun, and is expected to be complete in 1999 (Takekawa, personal communication 1997a). One area to be addressed in this planning process is USFWS coordination with other landowners who own land within the Refuge boundaries, and management of these lands. For example, The Washington Department of Fish and Wildlife owns three parcels within the Refuge boundaries (which include tidelands). Private landowners also own parcels within the Refuge boundaries, and the USFWS works to acquire parcels from willing sellers to complete to Refuge (Takekawa, personal communication 1997b).

Ongoing planning for the site is important, as visitation to the Refuge has increased dramatically, up approximately 400% between and 1978 and 1993. Visitation often exceeds vehicle parking capacity. It has been observed that approximately 20% of visitor traffic is estimated to be travelers using the site as a rest stop, rather than coming there to view the Refuge (Sprehn 1993). Also, additional residential growth is expected for the area surrounding the Refuge (Nisqually River Council 1993).

Supervision/Enforcement

Six permanent staff are based on-site at the Refuge. These staff are also assisted by staff from the USFWS enforcement branch and by volunteers. The volunteers help staff with various projects, which may involve interpretation, environmental education, resource management, maintenance, or administration (Sprehn 1993). Because they are based on-site, Refuge staff supervise the resources and interact with visitors on a daily basis. The approach taken is to educate visitors about resources and provide information about which recreational activities support USFWS goals (Takekawa, personal communication 1997b).

Additional Programs: Research, Monitoring, Education, Outreach, Public Involvement

To accommodate the approximately 80,000 visitors per year (Takekawa, personal communication 1997b), seven miles of trails are provided, as well as observation decks and photo blinds. The Refuge also features interpretive displays and operates an outdoor environmental education program (USFWS 1996c), run from the Twin Barns Educational Center, which houses additional interpretive displays and exhibits (Pierce County 1996). The popular education program for school groups pairs each visiting group with a volunteer (Takekawa, personal communication 1997b).

USFWS research focuses on basic monitoring and tracking of species. Bird studies are a major research focus, including aerial and land-based waterfowl surveys. Some of the bird research conducted has focused on shorebirds, Great Blue Herons, nesting bald eagles, and counts of raptor species. Vegetation mapping is also being conducted for inclusion in a new GIS database.

Refuge staff have applied research data at the site by creating or improving habitat for waterfowl, shorebirds, wading birds, rails and bitterns. They have constructed ponds, installed and upgraded

water control structures, and maintained wetlands by removing silt and cattails (USFWS 1990a). The northeast portion of tidelands at the Refuge have been designated a Research Natural Area, which is defined by the USFWS as areas where natural processes are allowed to predominate without human intervention," and where activities are limited to "research, study, observation, monitoring, and educational activities that are non-destructive, non-manipulative, and maintain unmodified conditions" (USFWS 1997b).

Nisqually NWR works with non-USFWS researchers, as well. One example is the US Geological Survey's continuing regional seismic study, which includes collecting mud core samples at the Refuge. Additionally, graduate students from various institutions come to perform original research at the Refuge; USFWS approves their studies on a case by case basis, depending upon the nature of the project and the proposed means of access (Takekawa, personal communication 1997b).

For More Information:

Nisqually National Wildlife Refuge
U.S. Fish and Wildlife Service
100 Brown Farm Road
Olympia, WA 98516

Telephone: (360) 753-9467
Fax: (360) 534-9302

42. Skagit

Wildlife Area

Date of Establishment: 1948, with acquisition continuing through 1992

Establishing Agency/Organization(s): Washington Department of Fish and Wildlife (WDFW)

Managing Agency/Organization(s): Washington Department of Fish and Wildlife (WDFW)

Counties: Skagit, Snohomish and Island

Location/Vicinity: The majority of Skagit Wildlife Area holdings are located in Skagit Bay between the mouths of the north and south forks of the Skagit River (**Map 45**). Additionally, smaller holdings and management units include intertidal areas in Port Susan Bay and the Camano Island shoreline on Skagit Bay.

Marine Boundary Description/Discussion: Intertidal areas are included within the Wildlife Area, but not subtidal areas are not (Garrett, personal communication 1997). Detailed descriptions or maps of exact boundaries and holdings are not available due to a variety of complicating factors, such as tideland ownership disputes and changes, missing information, and changing boundaries after floods. Efforts to develop maps for the site are currently in progress (Garrett, personal communication 1997).

Adjacent or Overlapping Marine Protected Areas: None

Current Size and Components

SUBTIDAL		INTERTIDAL		UPLAND		TOTAL ACRES	Shoreline Length (if known)
included (yes / no)	acres (if known)	included (yes / no)	acres (if known)	included (yes / no)	acres (if known)		
no	unknown	yes	unknown	yes	unknown	~13,000	unknown

The vast majority of estuarine and intertidal areas in the Skagit County portion of the Wildlife Area (the largest component) are owned by WDFW, with other public land portions owned by either DNR or the Bureau of Land Management (BLM). Only a relatively small portion of this area (on the order of 1200 acres) is privately owned (Garrett, personal communication 1997).

Goals/Purpose/Objectives: WDFW directives for Wildlife Areas include goals to:

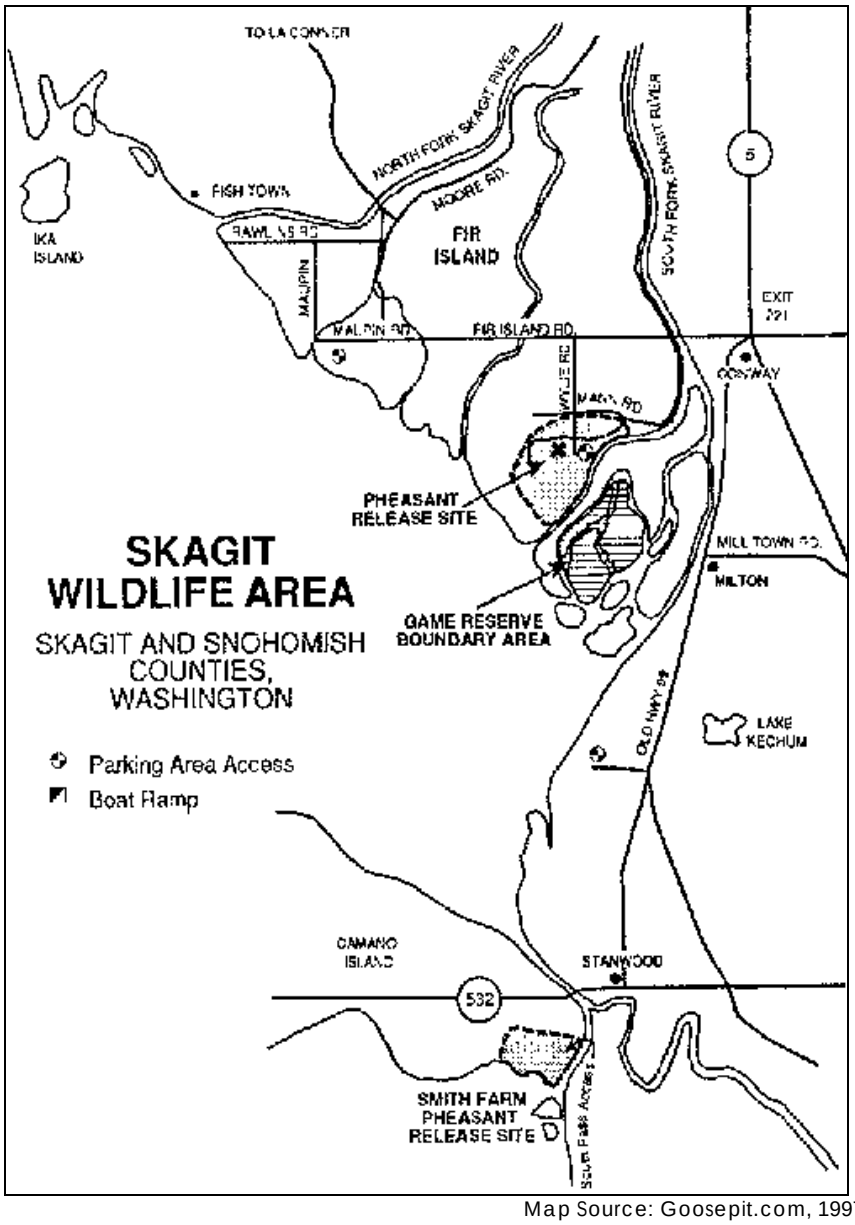
- Preserve, protect and perpetuate wildlife (RCW 77.12.010).
- Maximize game fish, hunting, and outdoor recreational opportunities compatible with healthy and diverse fish and wildlife populations (RCW 77.04.055).

- Secure the habitats needed to ensure the integrity of natural ecosystems, maintain or enhance the diversity and abundance of wildlife populations and maximize wildlife associated recreation (WDFW 1996b).

Primary Legal Authority

RCW 77.12.010 and 77.04: Washington's Wildlife Code—Game and Game Fish. Directs WDFW to preserve, protect, and perpetuate fish and wildlife, and maximize recreational opportunity.

Map 45. General Location of Skagit Wildlife Area



Map Source: Goosepit.com, 1997

Natural and/or Cultural Resource Values/Highlights

Select highlights concerning natural resource values and related human uses, as documented in the draft Skagit Wildlife Area Management Plan (1996b), include the following:

- The Skagit-Stillaguamish estuary is the largest estuary north of Mexico.
- The Skagit Delta is one of the major waterfowl wintering areas of the Pacific Flyway.
- Counts of up to 200,000 dabbling ducks and 40,000 snow geese have been made in local bays.
- A bird checklist for the site notes 180 species
- The rivers and estuarine systems of provide valuable habitat for anadromous fish species, including chinook, chum, and silver salmon, steelhead, Dolly Varden and cutthroat trout, largemouth bass, and black crappie.
- River otter and harbor seals are occasionally sighted
- A majority of the Wildlife Area is intertidal mud flats and marsh, with the upland portions being largely diked segments of the delta. The extensive diking may have altered the function of the delta area and its support of fish and wildlife (Palsson, personal communication 1997).
- Common, ghost and brown shrimp are abundant, and eastern softshell clam has historically provided a sport clam digging resource.
- Fishing is a major activity throughout the area and at the Wildlife Area
- The Wildlife Area and nearby valley are the most heavily hunted waterfowl areas in western Washington.
- An annual pheasant release program is popular with a small but enthusiastic number of hunters.
- Non consumptive uses such as hiking, birdwatching, photography, canoeing and outdoor educational activities are very popular at the Wildlife Area, and users engaged in these activities have long out-numbered hunters and fishers.
- The Skagit Wildlife Area provides 90,400 visitor days of recreation each year (42,500 visitor days for non-consumptive uses; 39,300 visitor days for small game hunting; 8,300 visitor days for fishing; and 300 visitor days for trapping).
- Farming occurs on several hundred acres of the Wildlife Area. Dikes control water levels for farming and flood control, while at the same time attracting higher numbers of waterfowl.

Restrictions on Human Activities to Protect Marine Resources

Habitat preservation is perhaps the most important role the Skagit Wildlife Area plays in protecting marine resources. The site serves to protect important intertidal habitats from developments and activities that might otherwise be damaging to, or cause the loss of, this delta area. As a form of proprietary protection, this approach has less to do with specific use restrictions on site (such as fishing regulations), and more to with the acquisition and setting aside of large tracts of fish and wildlife habitat.

At this time, no specific restrictions targeted at protection of marine resources are instituted by the Wildlife Area. However, the current site management planning process has produced some discussion of the possibility of a ban on commercial clam digging activities. The reasoning noted was that this activity disturbs the soil profile which subsequently may aid the invasion of non-native vegetation (WDFW 1996b). Also up for discussion is the possibility of restricting public

access to certain islands that are considered critical wildlife habitats for raptors (WDFW 1996b). Additionally, discussions about use conflicts at the site have prompted consideration of activity restrictions to address motorized personal watercraft issues (WDFW 1996b).

MANAGEMENT OF THE SITE

Planning

The importance of the site's habitat to migrating waterfowl provided, in 1948, the initial justification for the purchase of lands for the Wildlife Area, and remains the site's primary management focus. Over the years, acquisition of intertidal marsh and tideflat areas have consistently been based on a recognition of the site's unique wildlife habitat value and importance as a multiple-use recreation area. A majority of land area purchases have been supported by Federal Aid in Wildlife Restoration funds, state Wildlife funds, and through the Washington State Interagency Committee for Outdoor Recreation (IAC) (WDFW 1996b).

Following a public scoping process in 1993, a ten-member WDFW Cross-Divisional Task Team and Citizen's Advisory Group were formed and are working on drafting a management plan for the Skagit Wildlife Area. This planning effort was brought about in response to changing habitat conditions, public expectations and priorities. Through this planning process, the scoping of public issues and concerns, mapping and assessment of resources and identification of priority management zones have resulted in the drafting of a diverse set of proposed management actions (WDFW 1996b).

The ten major steps in the development of the South Puget Sound Wildlife Area Management Plan are as follows (WDFW 1996b) :

1. scoping of public issues and concerns
2. mapping resources (example: habitats, water, etc.)
3. identifying species and habitat management zones
4. prioritizing management zones
5. identifying current and optimum conditions for management zones
6. identifying legally required activities and activities necessary to maintain existing conditions
7. identifying enhancement activities to improve current conditions
8. addressing agency and public issues and concerns
9. developing a schedule and budget for activities over a four-year period
10. monitoring

The full scope of fisheries management issues applicable to this site, especially salmon and steelhead stocks and habitat, are not yet reflected in current planning efforts. The reason for this is because the management planning effort currently underway for the Wildlife Area was initiated in 1992 by the former Washington Department of Wildlife prior to its merger with the Washington Department of Fisheries (now the Washington Department of Fish and Wildlife). However, a WDFW planned phased process applicable to this and other Wildlife Areas calls for salmon and steelhead habitat inventories to be completed, which will include evaluation of regulatory parameters and ecosystem standards, and the proposal and prioritization of